

HUMAN PAPILLOMAVIRUS (HPV) AND HPV VACCINATION

I. INTRODUCTION

Human papillomaviruses (HPV) are a common family of viruses with over 120 types known to infect human epithelial tissue. Most of these cause common warts of cutaneous epithelial tissue such as those that appear on hands on feet. Approximately 40 are known to infect mucosal epithelial cells of the mouth, throat and genital tract. Most HPV infections of the genital tract are asymptomatic and resolve spontaneously, but infection can also lead to genital warts and epithelial neoplasia. Nearly 80 million Americans are infected with genital HPV, and approximately 19,000 women and 12,000 men are diagnosed with HPV-related cancer each year. HPV infections of the genital tract are the most common sexually transmitted viral infections in the United States.

Low-risk HPVs, do not cause cancer but can cause skin warts (technically known as condylomata acuminata) on or around the genitals and anus. HPV type 6 or 11 cause 90% of genital warts. Genital warts are usually asymptomatic and can be found most commonly at the introitus in women, under the foreskin of the uncircumcised penis, and on the shaft of the circumcised penis. Genital warts can also occur at multiple sites in the anogenital epithelium or within the anogenital tract (e.g., cervix, vagina, urethra, perineum, perianal skin, and scrotum).

There are about a dozen high-risk HPVs – those that can cause cancer. Two of these, HPV types 16 and 18, are responsible for most HPV-caused cancers. Virtually all cases of cervical cancer are caused by HPV, and just two HPV types, 16 and 18, are responsible for about 70% of all cases. The rest of cervical cancers are due to HPV types 31, 33, 35, 39, 45, 51, 52, 56 and 58.

II. HISTORY AND EVALUATION

A. History may include:

1. Recent change in sexual partner
2. Partner symptoms of STIs
3. Multiple partners
4. Lack of STI protection (lack of condom use)
5. Infection with human immunodeficiency virus (HIV) or other immunosuppressive medical condition

B. Symptoms of condyloma acuminata may include:

1. Painless wart-like lesions in perineal area
2. Burning, pain or priuritis

C. Cervical cancer is often asymptomatic especially in early stages. Symptoms, when there are any, may include:

1. Vaginal bleeding
2. Abnormal discharge
3. Pain with intercourse

D. Physical exam findings may include: Flat, papular, or pedunculated growths on the genital mucosa (condyloma). Colposcopy is usually necessary to detect any changes to the cervix related to HPV infection.

III. DIAGNOSIS

- A. Diagnosis of condyloma acuminatum is usually made based on visual inspection by clinician. Biopsy may be indicated in cases unresponsive to treatment or if there is other reason for uncertainty in the diagnosis.
- B. Several HPV tests are currently approved by the [FDA](#) for cervical cancer screening. These tests can detect HPV infections before abnormal cell changes are evident. The most common [HPV test](#) detects DNA from several [high-risk HPV](#) types, but cannot identify the specific type(s) that are present. Other tests are able to detect DNA or RNA from HPV types 16 and 18. Please refer to the cervical cytology guideline for more details on the use of HPV testing for cervical cancer screening.
- C. There are no FDA-approved tests for the detection of HPV in men or screening for HPV-related pre-cancerous changes in tissues of the anus, vulva, vagina or oropharynx.

IV. TREATMENT

- A. Provide treatment if client has signs or symptoms consistent with condyloma acuminatum following the most recent CDC STD Treatment Guidelines found at: <http://www.cdc.gov/std/treatment/default.htm>
- B. The primary goal of treatment is the removal of symptomatic warts – removing the warts does not remove the virus. Treatment can induce wart-free periods in most clients. Secondary infection should be treated as it facilitates the growth or spread of genital warts. The persistence or recurrence of HPV disease is very common following completion of all treatment modalities. Spontaneous regression of genital warts often occurs.
- C. HPV-related pre-cancerous changes should be managed based on current ASCCP Updated Consensus Guidelines on the Management of Women with Abnormal Cervical Cancer Screening Tests and Cancer Precursors which can be found in the guideline on cervical cytology or online at : <http://www.asccp.org/asccp-guidelines>

V. SPECIAL TREATMENT CONSIDERATIONS

- A. The safety of podofilox and imiquimod during pregnancy has not been established.
- B. Clients with cervical, vaginal, anal and/or large vulvar warts should be referred for site medical director or qualified physician for consultation and management.

VI. HPV VACCINATION

Vaccination against human papillomavirus (HPV) is recommended to prevent HPV infections and HPV-associated diseases, including cancers. Ideally, adolescents should be vaccinated before they are exposed to HPV. However, people who have already been infected with one or more HPV types can still get protection from other HPV types in the vaccine.

- A. The CDC recommends HPV vaccination for the following populations:

1. All adolescents (including girls and boys) at age 11 or 12 years, (although can be started at 9 years of age).
 2. Females ages 13 through 26 years and males ages 13 through 21 years who were not adequately vaccinated when they were younger.
 3. Young men who have sex with men, including young men who identify as gay or bisexual or who intend to have sex with men through age 26 if they were not vaccinated earlier;
 4. Young adults who are transgender through age 26 if they were not vaccinated earlier and
 5. Young adults with certain immunocompromising conditions (including HIV) through age 26.
- B. Three HPV vaccines are licensed for use in the United States. All of these target HPV types 16 and 18. As of late 2016, however, only 9vHPV is being distributed in the United States.
1. Bivalent (2vHPV) vaccine (Cervarix) includes antigens for HPV types 16 and 18. It is licensed for use in females aged 9 through 25 years
 2. Quadrivalent (4vHPV) vaccine (Gardasil) includes antigens for HPV types 6, 11, 16 and 18. It is licensed for use in females and males aged 9 through 26 years
 3. 9-valent (9vHPV) vaccine (Gardasil 9) includes antigens for HPV types 6, 11, 16, 31, 33, 45, 52, and 58. It is licensed for use in females and males aged 9 through 26 years
- C. There are two different dosing schedules based on age at first dose.
1. Two-dose schedule. This is the indicated dosing schedule if the first dose is given before the 15th birthday. The second dose is recommended 6-12 month after first dose.
 2. Three-dose schedule. This is the indicated dosing schedule if the first dose of any HPV vaccine is given on or after the 15th birthday. The second dose is recommended 1–2 months after the first dose, and the third dose is recommended 6 months after the first dose (0, 1–2, 6 month schedule).
- D. Minimum dosing intervals are required in order to ensure adequate immunity
1. In a 2-dose schedule of HPV vaccine, the minimum interval is 5 months between the first and second dose. If the second dose is administered at a shorter interval, a third dose should be administered a minimum of 12 weeks after the second dose and a minimum of 5 months after the first dose.
 2. In a 3-dose schedule of HPV vaccine, the minimum intervals are 4 weeks between the first and second dose, 12 weeks between the second and third dose, and 5 months between the first and third dose. If a vaccine dose is administered at a shorter interval, it should be re-administered after another minimum interval has been met since the most recent dose.
- E. There is no maximum interval for administration of HPV vaccinations. There is no reason to restart the vaccine series if the HPV vaccine schedule is interrupted; patients who have exceeded the minimum interval for the next dose by months or even years, may be given the next dose needed.
- F. The 9-valent HPV vaccine may be used to continue or complete a vaccination series started with quadrivalent or bivalent HPV vaccines.

- G. There is no ACIP recommendation regarding additional 9-valent HPV vaccine doses for persons who have been adequately vaccinated with bivalent or quadrivalent HPV vaccine.

VII. PATIENT EDUCATION AND COUNSELING

- A. All clients who are eligible for HVP vaccination (see eligibility criteria above) should be informed about the HPV vaccination and if they elect for vaccination should be provided the vaccination or a referred to a site where they can receive the vaccination
- B. All female clients should be educated on the connection between high-risk HPV and cervical cancer and should receive regular screening for cervical cancer following current screening recommendations (please refer to guideline on cervical cytology)
- C. Clients with HPV infection should be made aware that they are infectious to sexual partners. The regular use of condoms is recommended to help reduce transmission.
- D. Examination of sex partners is not necessary, however, partners may be referred for examination for possible genital warts and other STIs.
- E. An important part of the clinical management is helping the client understand that HPV infection is a lifelong infection that may recur at any time and at any anatomic site.

VIII. FOLLOW-UP

- A. Recurrent lesions following apparent complete removal and spontaneous remission are common; subsequent treatment may be necessary. There is no evidence to indicate that reinfection causes recurrences.
- B. Cervical cancer screening is recommended for women beginning at age 21 years and continuing through age 65 years for both vaccinated and unvaccinated women. Women who have received any HPV vaccine should still be screened for cervical cancer beginning at age 21 years, in accordance with currently published cervical cancer screening guidelines.

REFERENCES

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